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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/783,154

02/19/2004

John A. Dickson

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1875

8840 7590 08/17/2007

INTELLECTUAL PROPERTY  
ALCOA TECHNICAL CENTER, BUILDING C  
100 TECHNICAL DRIVE  
ALCOA CENTER, PA 15069-0001

EXAMINER

MORILLO, JANEL COMBS

ART UNIT

PAPER NUMBER

1742

MAIL DATE

DELIVERY MODE

08/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,154	<b>Applicant(s)</b> DICKSON ET AL.	
	<b>Examiner</b> Janelle Combs-Morillo	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23,25-30 and 33-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23,25-30 and 33-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 21, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 23, 25-30, 33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedyk (US 5,911,844) in view of "Aluminum and Aluminum Alloys" p 305, 311, 319, 462-463.

Benedyk teaches a method of forming age hardenable aluminum alloys by providing a tempered aluminum alloy in an extruded profile or rolled sheet form (column 3 line 8-9), applying a retrogression heat treatment to a localized region (column 2 lines 19-20) said retrogression heat treatment including heating to provide adequate softening and water or fluid quenching to room temperature (column 3 lines 46-53); forming said softened material by drawing, punching, or stamping (column 3 lines 17, 65-66) to form the desired shape, natural or

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artificial aging to exceed the original hardness of the material (column 4 lines 1-4). Benedyk teaches that said process is applied to aluminum alloys, such as AA6061 (which meets claims 23, 25). Benedyk does not teach a) starting with T4 temper, b) forming splines, c) forming within about 12 hrs after quenching (amended cl. 23, 33), or d) cooling the metallic tube below room temperature (amended cl. 23).

Concerning a), though Benedyk does not teach starting with a T4 type temper- but rather teaches starting with stronger/harder tempers T5 or T6 (which meets cl. 23). However, it would have been obvious to one of ordinary skill in the art to apply the process of retrogressive heat treating to a T4 tempered aluminum alloy, because Benedyk teaches said process greatly improves formability, and wherein the formability achieved by said retrogressive heat treating considerably exceeds that of a traditional T4 temper (Table 1, column 4 lines 60-67).

Concerning b), though Benedyk does not specify the forming of splines on a tube of said alloy, Benedyk teaches that said retrogressive heat treatment is beneficial for forming extrusions by drawing, punching, or stamping (column 3 lines 17, 65-66) to any desired shape. Therefore it is held to be within the disclosure of Benedyk to form extruded or rolled profiles, including tubes, by stamping (including stamping splines), because Benedyk teaches said process greatly improves the ductility and formability (column 4 line 65).

Concerning c), "Aluminum and Aluminum Alloys" teaches that "because precipitation hardening will occur at room temperatures, forming or straightening usually follows as soon after quenching as possible" (p. 305, 3<sup>rd</sup> column). It would have been obvious to one of ordinary skill in the art to form  $\leq 8$  hrs after quenching because "Aluminum and Aluminum Alloys" teaches that the alloy material is the most ductile/greater formability immediately after quenching.

Concerning d), Benedyk does not mention aging below room temperature in order to retard natural aging, or aging to achieve T4 conditions (cl. 35). However, changes in concentration or temperature will generally not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical, i.e. they produce a new and unexpected result. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the instant case, aging at a given temperature is held to be a result effective variable, wherein the expected result is degree of precipitation.

Concerning claims 26-28, 34, as stated above, it is held to be within the disclosure of Benedyk to form extruded, rolled, or drawn profiles, including seam and seamless tubes, by stamping splines.

Concerning claim 30, as stated above, Benedyk teaches quenching to room temperature via water quenching (column 3 lines 52-53).

Concerning claim 29, Benedyk teaches said alloy is in a T5 or T6 temper, which meets said direct quench or separate solution heat treating step limitations.

Concerning claim 36, Benedyk teaches aging to achieve T6 properties (column 6 lines 5-6).

Concerning claim 37, "Aluminum and Aluminum Alloys" teaches at p 311 that precipitation heat treatments/aging typically occurs at temperatures 240-375 °F for 5-48 hrs, and wherein T6 tempers have the highest strength properties (p 311, column 1, 3). It would have been obvious to one of ordinary skill in the art to perform the process of retrogressive heat

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treating taught by Benedyk, with a final artificial aging at temperatures of 240-375 °F to provide a near T6 temper, because “Aluminum and Aluminum Alloys” teaches that said temperature range is useful for creating precipitation hardening effect in heat treatable aluminum alloys, and T6 tempers have the highest practical strength (p 311).

Concerning claims 38 and 39, Benedyk does not teach an anodizing layer is applied to said material. However, “Aluminum and Aluminum Alloys” teaches that anodizing layers are applied, such as a coatings  $\geq 25 \mu\text{m}$  (p 463, 2<sup>nd</sup> column) thick, in order to increase corrosion resistance (p 462) and increase paint adhesion (p 463). It would have been obvious to one of ordinary skill in the art to form an anodizing layer on the tube material taught by Benedyk, because “Aluminum and Aluminum Alloys” teaches said layer is beneficial to increase corrosion resistance (p 462).

#### ***Response to Amendment/Arguments***

4. In the response filed on June 21, 2007 applicant amended claims 23, and submitted various arguments traversing the rejections of record. No new matter has been added. Claims 23, 25-30, 33-39 are now pending.
5. Applicant's argument that the present invention is allowable over the prior art of record because the prior art does not teach or suggest a method of forming splines on a metallic tube substantially as presently claimed has not been found persuasive. Though Benedyk does not specify cooling the metallic tube to at least 5C below room temperature to retard natural aging so that a T4 temper is not achieved, holding/aging at a given temperature is held to be a result effective variable, wherein the expected result is degree of precipitation (see above rejection for

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details). Applicant's argument that the present invention is allowable over the prior art of record because "Aluminum and Aluminum Alloys" is far removed for applicant's method has not been found persuasive. "Aluminum and Aluminum Alloys" is cited for general heat treatment and forming teachings well known in the art, and motivation to apply such treatments, as stated in final rejection. Applicant's argument that the present invention is allowable over the prior art of record because Benedyk fails to form within about 12 hrs after the completion of the solution heat treatment has not been found persuasive. It would have been obvious to one of ordinary skill in the art to form  $\leq 8$  hrs after quenching because "Aluminum and Aluminum Alloys" teaches that the alloy material is the most ductile/greater formability immediately after quenching (p. 305, 3rd column).


### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
JCM

August 10, 2007

  
ROY KING  
SUPERVISORY PATENT EXAMINER  
TECHNICAL SERVICES GROUP